

NAME:

DATE:

Unit-2 Mastery Assessment (version 631)

Question 1 (10 points)

Let f represent a function. If $f[50] = 28$, then there exists a knowable solution to the equation below.

$$y = \frac{f[2(x+15)]}{4} + 29$$

Find the solution.

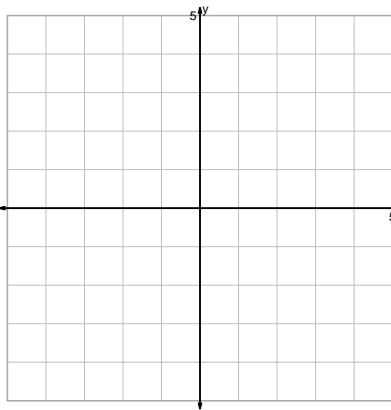
$$x =$$

$$y =$$

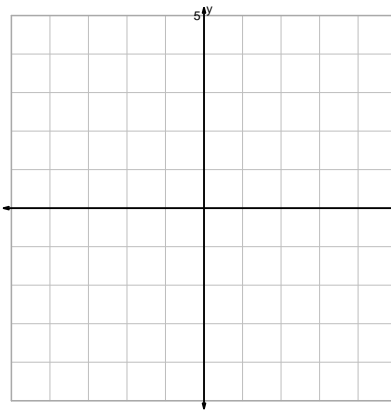
Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

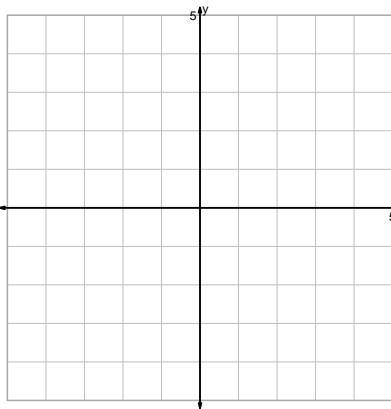
$$y = x^3 - 2$$



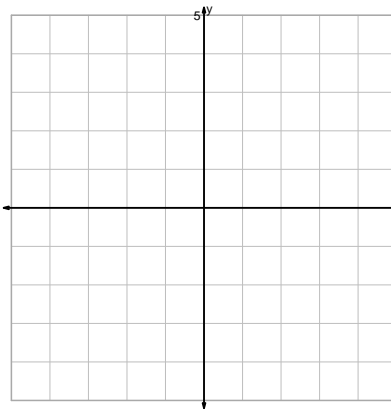
$$y = -\log_2(x)$$



$$y = \log_2\left(\frac{x}{2}\right)$$

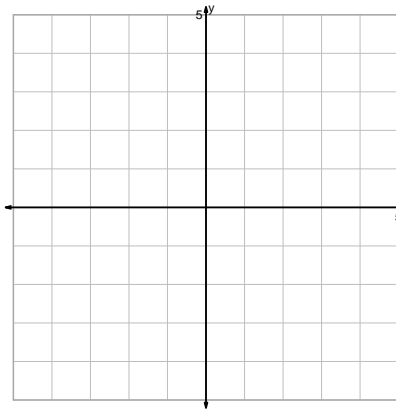


$$y = \frac{2^x}{2}$$

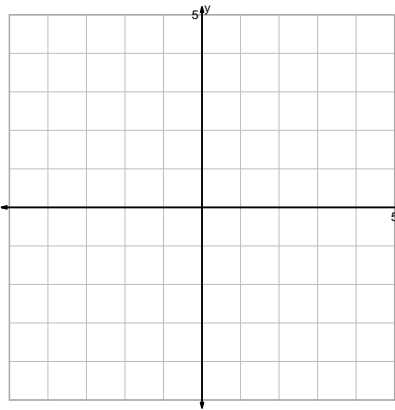


Question 2 continued...

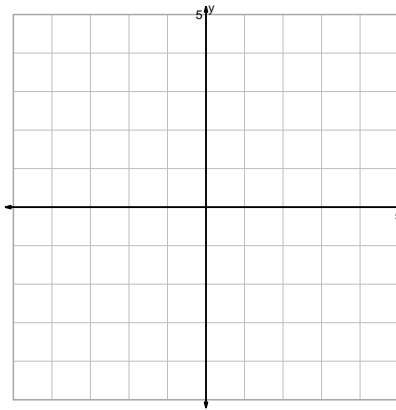
$$y = 2^{-x}$$



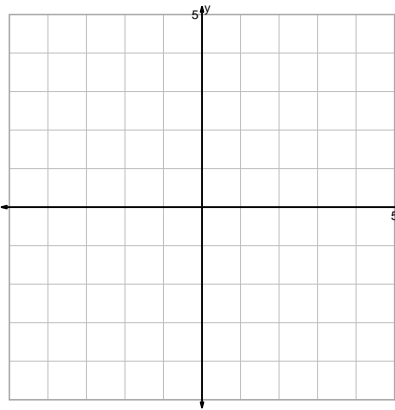
$$y = 2 \cdot \sqrt[3]{x}$$



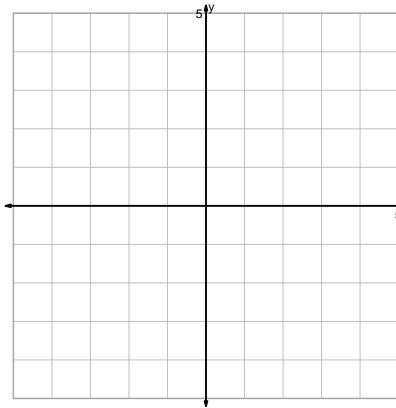
$$y = (x - 2)^2$$



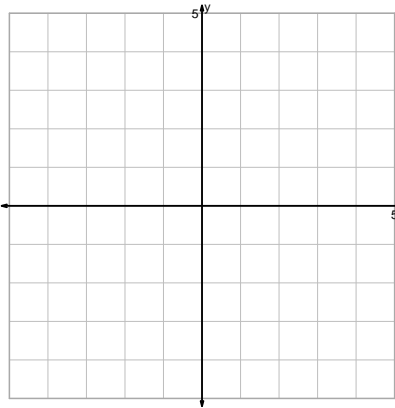
$$y = x^2 + 2$$



$$y = (x + 2)^3$$

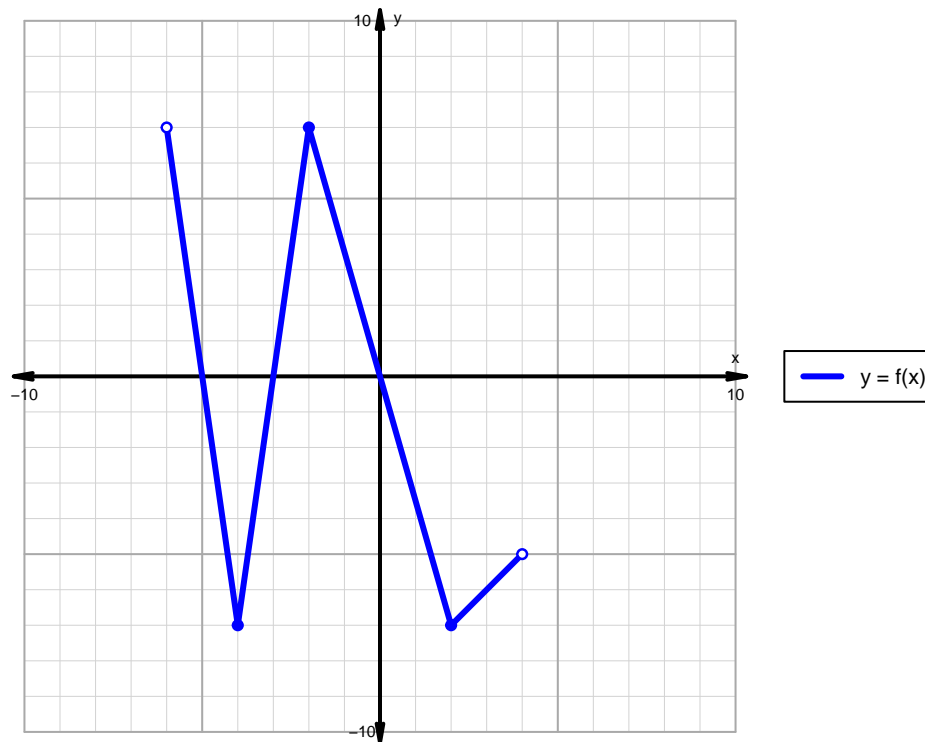


$$y = \sqrt{2x}$$



Question 3 (20 points)

A function is graphed below.



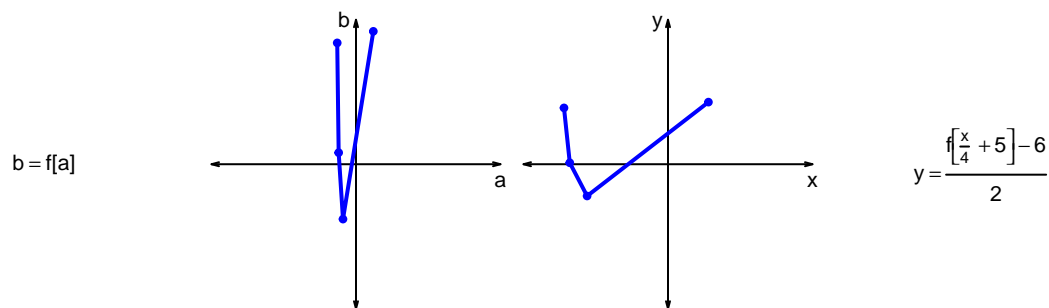
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f[\frac{x}{4}+5]-6}{2}$ are represented below in a table and on graphs.

a	b	x	y
-13	84	-72	39
-12	8	-68	1
-9	-38	-56	-22
12	92	28	43



- a. Write formulas for calculating x from a and calculating y from b . (Or, write the coordinate transformation formula.)

- b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f[\frac{x}{4}+5]-6}{2}$?

Question 5 (10 points)

A parent square-root function is transformed in the following ways:

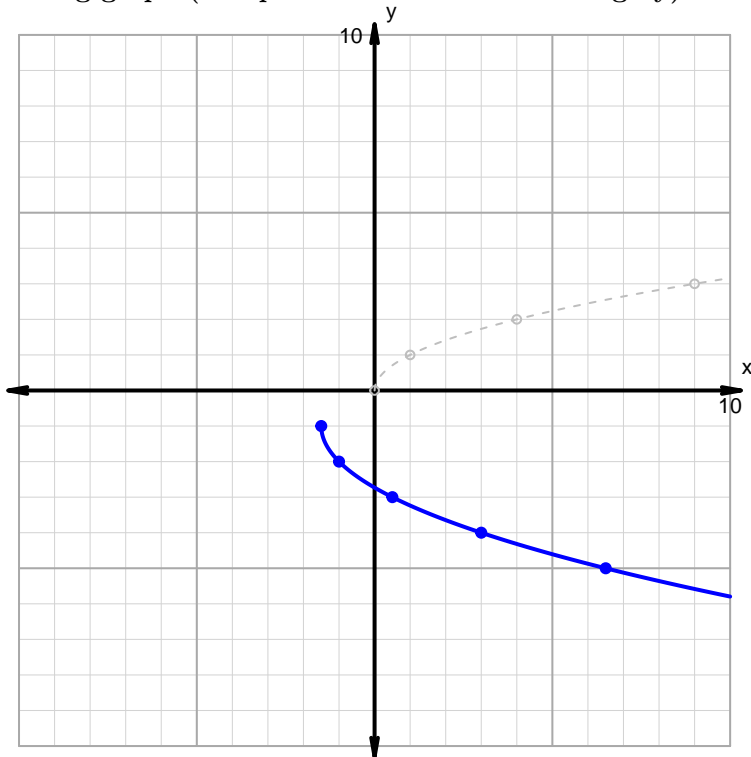
Horizontal transformations

1. Translate left by distance 3.
2. Horizontal shrink by factor 2.

Vertical transformations

1. Translate up by distance 1.
2. Vertical reflection over x axis.

Resulting graph (and parent function in dashed grey):

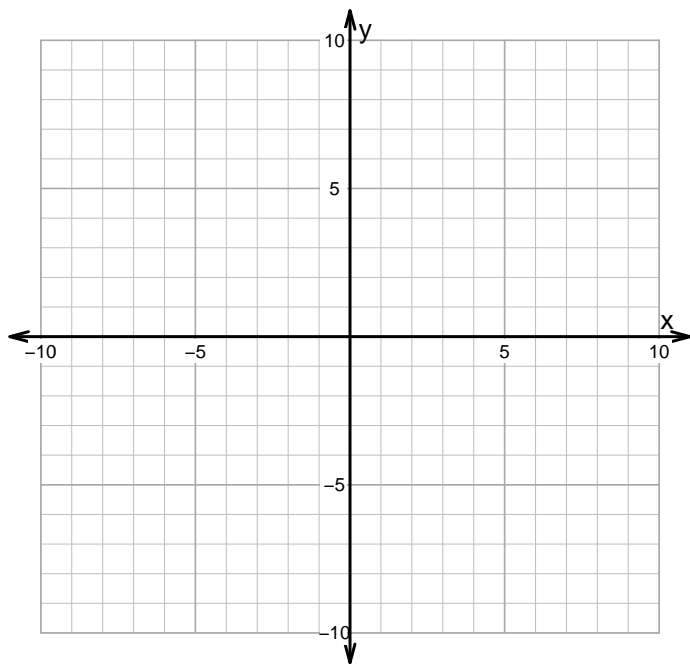


- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = \frac{1}{3} \cdot |x + 5| - 1$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	